

The only substance known to exist in blood that might possibly be thought to interfere in the Okuda method is ergothioneine. However, the sample of ergothioneine in the laboratory did not react in Okuda's method until it had been reduced with zinc and hydrochloric acid. It could not, therefore, interfere in the determination of reduced glutathione, which has been found to be 95 per cent of the total glutathione, if the analysis is performed within one hour after drawing the blood. The factor on the  $\frac{M}{1200}$  potassium iodate for 10 mg. reduced glutathione is 6.48 cc., while for 10 mg. ergothioneine after reduction it is only 0.03 cc. The amount of ergothioneine in 100 cc. of human blood averages about 7.5 mg., according to Behre and Benedict.<sup>23</sup> The titer, then, for the amount present in one or two cc. of blood is negligible. However, a method for eliminating ergothioneine has been devised and will be described in a later paper.

*Summary.*—A method for the determination of glutathione in blood has been described. The average amount found in normal human blood is 59 mg. before reduction and 62 mg. after reduction. No cystine nor cysteine was found in normal human blood. The method has been found to be more accurate than the Tunnicliffe outside indicator method, and is being applied to a number of pathological bloods.

PALEONTOLOGY.—*A new Eocene Leda from Black Bluff, Alabama.*<sup>1</sup> JULIA A. GARDNER, U. S. Geological Survey.

Through the interest and generosity of Dr. Walter B. Jones, the State Geologist of Alabama, I had the good fortune in late July of 1929, to join a small party from the University of Alabama on a two-day collecting trip to Black Bluff, Sumter County, on the Tombigbee River about 15 miles in an air line below Demopolis and  $2\frac{1}{2}$  miles below the mouth of Sucarnoochee Creek. Black Bluff is a superb exposure extending for fully half a mile along the western bank of the Tombigbee. Under the caption, "The Black Bluff or Sucarnochee Series," the section was described by Dr. E. A. Smith<sup>2</sup> over thirty years ago, the fossils having been listed even earlier by Truman H. Aldrich.<sup>3</sup> Ever

<sup>23</sup> J. A. BEHRE and S. R. BENEDICT. Journ. Biol. Chem. **82**: 11. 1929.

<sup>1</sup> Published by permission of the Director, U. S. Geological Survey. Received October 5, 1929.

<sup>2</sup> EUGENE A. SMITH, LAWRENCE C. JOHNSON, and DANIEL W. LANGDON, JR. Ala. Geol. Survey Rept., Geology Coastal Plain Ala. 186. 1894.

<sup>3</sup> TRUMAN H. ALDRICH. Ala. Geol. Survey Bull. **1**: 60. 1886.

since that time, it has served as a valuable check both lithologically and faunally for the Sucarnoochee clay, the middle formation of the Midway, the lowest group in the Eocene.

Unlike so many of the older localities, Black Bluff is today easily recognizable from the early descriptions, though it may have suffered a certain amount of slumping from the first altitude estimate of eighty feet. The heavy shingle of limonite concretions near the water's edge, a feature mentioned by Doctor Smith, is still a striking character. The bed is uncommonly persistent, for flood waters would certainly have washed away a softer series during thirty-five years. A ferruginous conglomerate made up largely of fucoidal concretions is characteristic of the upper end of the Bluff. Organic remains, particularly *Trochocyathus hyatti* Vaughan, are superficially embedded in large numbers upon the upper surface. Other flattened concretions of irregular outline, resembling masses of small shot and possibly containing some barite, are fairly common. Rosettes of selenite crystals are abundant in the upper part of the section at the lower end of the bluff. Although in the greater part of the section they are not sufficiently calcareous to react to acid, the clays contain, locally, numerous lime nodules. The clay is a true gumbo, slaty black, very fine and homogeneous, breaking with a conchoidal fracture, massive and impossible to walk upon when wet, splitting and spreading on drying like thick leaves of a heavy book.

The Black Bluff fauna is small and, to a certain extent, segregated. Crustacean remains are most common at the upper end of the Bluff, about fifteen to twenty feet above the base of the ledge which outcrops at the river margin at moderately low water. Small univalves, particularly turritids, are fairly plentiful just above the crustacean bed. Some of the turritids are new but too imperfect to warrant description. *Volutocorbis rugatus* (Conrad), *Olivella*, possibly *mediavia* Harris, an indeterminate naticoid, and a new but imperfect species of *Architectonica* were collected from the same section but eight to ten feet below the crabs. It is highly probable that this gastropod zoning is due in large part to the accidents of collecting, although the crustaceans seem to be confined in large measure to a single definite horizon. Bivalves are relatively rare at the upper end of the Bluff but very large and well preserved *Nucula mediavia* Harris, *Leda* (*Ledina*) *jonesi* new species and *Cucullaea macrodonta*, together with *Enclimatoceras* fragments, are fairly common a quarter to half a mile downstream. *Trochocyathus hyatti* Vaughan, a small solitary coral, is perhaps the only

form fairly common throughout the vertical section and the entire length of the outcrop. One of the most remarkable features of the Black Bluff fauna is the apparent absence of *Venericardia* and *Turritella*, by far the most conspicuous groups both in the Clayton limestone beneath and in the Naheola above. Not a fragment of either genus was observed nor has any species been reported by Aldrich or by Harris. Habitat and not the time element was apparently the determining factor in excluding these two genera so prominent in the Midway life. Shallow but undisturbed waters probably covered the silty bottom. Deep-water conditions would have made life impossible both for the corals and the crabs, and an inrush of sediment would have buried the corals, the most prevalent forms in the fauna.

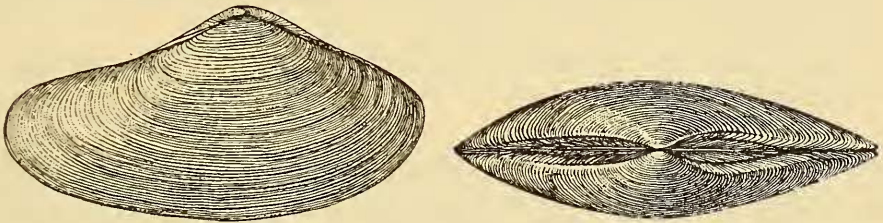


Figure 1. *Leda (Ledina) jonesi* n. sp.<sup>4</sup> × 2.

***Leda (Ledina) jonesi* Gardner, new species**

1896. *Yoldia eborea* Conrad. Harris, Bull. Am. Paleontology **1** (No. 4): 56, pl. 4, fig. 7 (ex parte).

1898. *Leda (Ledina) smirna* Dall, Wagner Free Inst. Sci. Trans. **3** (pt. 4): 578, 580 (ex parte).

Shell large for the genus, *Yoldia*-form, moderately heavy and well polished, smoothly and rather strongly inflated. Umbones submedial, obtuse but fairly prominent, the tips incurved and almost in contact. Lunule narrow, half as long as the anterior dorsal margin, defined by the smooth surface and the pinched margin. Escutcheon similar in general outline and surface to the lunule but longer and wider, more sharply delimited and extending more than two-thirds of the distance to the posterior extremity; both lunule and escutcheon framed by faint rays which are produced almost to the lateral margins. Anterior half of shell obliquely truncate dorsally, rounding laterally into the broadly arcuate base. Posterior half of shell constricted behind the umbones, relatively narrow but rounded at the posterior extremity. Outer surface smooth excepting for incrementals and a microscopically fine and regular concentric striation. Chondrophore small, trigonal, set deep beneath the umbones. Hinge teeth strong, taxodont, from 20 to 25 in both the anterior and the posterior series. Muscle scars rather obscure, the anterior larger and broader than the posterior. Pallial line inconspicuous, simple.

*Dimensions*.—Altitude, 13.6 millimeters; latitude, 27.1 millimeters; diameter, 10.9 millimeters.

<sup>4</sup> The line drawings were made by Miss FRANCES WIESER.

*Holotype*.—U. S. Nat. Mus. No. 371067.

*Type locality*.—Black Bluff, Tombigbee River, sec. 12, T. 16, R. 1 W., Sumter County, Alabama.

*Leda jonesi* is one of the most common species in the small Black Bluff fauna. Though well represented in the early collections, it was included under "*Yoldia eborea*" Conrad, later *Leda smirna* Dall. Harris (*op. cit.*, 56) noted, however, that "there is considerable variation in the size as well as the shape of this species. The Tombigbee River specimens are larger and longer than those from the Alabama River exposures." The larger size, less trigonal outline, more rounded posterior extremity, and less arcuate ventral margin are sufficiently distinctive to justify the separation of the Black Bluff species from *Leda smirna* of the Matthews Landing, Alabama River, fauna. The differences are significant, for Black Bluff offers the type section of the Sucarnoochee clay while Matthews Landing is the most highly fossiliferous outcrop of the overlying Naheola formation.

I have the pleasure of naming this species in honor of Dr. Walter B. Jones, the State Geologist of Alabama.

ZOOLOGY.—*Field notes and locality records on a collection of amphibians and reptiles chiefly from the western half of the United States.*

I. *Amphibians*.<sup>1</sup> CHARLES E. BURT and MAY DANHEIM BURT, American Museum of Natural History. (Communicated by LEONHARD STEJNEGER.)

During the course of an automobile tour through the western half of the United States, from June 10 to September 15, 1928, the opportunity was taken to collect as many amphibians and reptiles as the time allowed. The following account has been prepared in order to make the locality records obtained available to students of distribution and to put into permanent form the numerous field observations made during the course of the collecting. Every effort has been made to make the determination of species as accurate as possible, but critical taxonomic notes on details of coloration and scutellation have usually been omitted, since in most cases this type of information may best be given by subsequent revisers of the genera concerned.

The opportunity has been taken to include here a series of about forty specimens from the authors' personal collection.<sup>2</sup> All of the specimens here reported, with the exception of a number used in per-

<sup>1</sup> Received October 3, 1929.

<sup>2</sup> Records based on specimens not taken by the authors are associated with the names of the collectors.